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**Subject:** Leachate Testing to Support Portland Harbor FS  
**Date:** 10/17/2007 03:24 PM

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All, here is a draft request from EPA regarding leachate testing to support the Portland Harbor FS. This should be used as talking points for our planned discussion on Friday. I was not sure whether a time had been agreed upon but the morning works best.

Eric

EPA requests the LWG provide a proposal for performing leachability testing to support the Portland Harbor FS. This information is needed to determine which sediments are suitable for in-water disposal within a confined disposal facility (CDF) or a confined aquatic disposal (CAD) unit, to evaluate capping as a remedial action alternative, to help develop cost estimates for in-water disposal of confinement, and evaluate upland disposal options. This information could also be used to evaluate whether contaminated site sediments are suitable for disposal in into the proposed Terminal 4 confined disposal facility (T4 CDF). Background, rationale and methodologies are provided below.

## **Background**

Sediment remedies typically consist of a combination of dredging, capping and monitored natural recovery. Remedies that require the containment of contaminated sediments within or adjacent to the aquatic environment will require an evaluation of contaminant mobility. This information may be used to evaluate disposal within a confined disposal facility (CDF) or a confined aquatic disposal (CAD) unit and to evaluate capping. Sediments that leach contaminants above concentrations that are protective of human health or exceed criteria, may not be suitable for in-water confinement or may require engineered solutions (e.g., liners and cap amendments) at increased cost. In addition, remedies that require upland disposal will require leachate evaluate suitability for upland disposal.

## **Rationale**

Considerable sediment characterization has been performed on contaminated sediments at the Portland Harbor site. However, comparable leachate testing has not occurred. This lack of Portland Harbor sediments leachability data is a limitation to moving forward with the evaluation of remedial action alternatives at the Portland Harbor site. Certain known highly or uniquely contaminated locations (e.g., Gasco and Arkema) are likely to be excluded from certain types of in-water disposal based on existing information (e.g., in-water sediment data, upland leachate testing, the known presence of non-aqueous phase liquids) suggesting that the contaminated sediments are highly leachable. However, this information is based on a presumed precaution rather than based on the known leachable characteristics of the sediments themselves. Leachability characterization of a variety of potential Portland Harbor contaminated sediment locations is required to design environmentally-safe disposal sites, whether the T4 CDF, other CDFs, or CADs. In addition, sediment leachability may be the determining characteristic whether a contaminated sediment matrix could be adequately remediated by capping or would need to be removed and confined and/or whether it would be suitable for subtitle D or C landfill. Additional information on each data use is summarized

below:

- Confined Disposal Facilities: The generation and management of leachate is recognized as a critical path component to an adequate and functional CDF. While a CDF can be designed to contain nearly any level of contamination, the characteristics of the specific waste must be understood first. High bulk chemistry alone is a good indicator of general risk to human health and the environment; however, high chemistry does not mean highly leachable, nor is it specific to the degree of or pathway at risk.
- Capping and Confined Aquatic Disposal: Advective groundwater transport has the potential to transfer contamination through a cap or CAD cover. As stated above, high bulk chemistry is a good indicator of general risk to human health and the environment, however, it does not necessarily assess the potential for contaminated sediments to contaminate the cap surface as a result of advective groundwater transport. This information is needed to evaluate elements of cap construction such as cap thickness, cap construction material and the need for the addition of cap amendments such as organo-clay.
- Upland Disposal: The toxicity characteristic leaching procedure (TCLP) was developed to determine the suitability of material for disposal in municipal (subtitle D) landfills. Material that fails the toxicity characteristic leaching procedure may require treatment to eliminate the “toxicity characteristic” or disposal in a hazardous waste (subtitle C) landfill. Either option will have a direct impact on the cost of upland disposal and must be considered in the feasibility study.

### **Suggested Methodologies:**

EPA requests that the LWG develop a proposal for collecting and furnishing necessary leachability data on several areas of Portland Harbor sediments. Ongoing leachability testing is currently underway at the T4 location is expected to be furnished to EPA when the effort is complete. This testing is separate from this request. The following specific recommendations represent first-cut consideration on the scope and magnitude of the data collection effort, but do not represent a full integration of the Round 2 Data Submittal. These data should be strongly considered in development of the LWG's proposal.

Samples: Several short (4- to 8-foot) cores to be composited into a single sample for each location. The intention is to collect cores that would result in a “representative sample” that is on the high side of contamination, but does not represent a “worst case” contamination condition.

Locations: EPA has identified a tentative list of locations where composite samples should be created for testing. This list uses names of areas shown on the LWG's Proposed Surface & Subsurface Samples maps, dated September 21, 2007.

AOPC 1: OSM

AOPC 3: International Slip/Schnitzer (near the head of slip)

AOPC 4: Schnitzer

AOPC 7: Marcom Areas 6A and 5H south of St John's Bridge  
Marina and US Moorings

AOPC 13 and area 6H: Willamette Cove

AOPC 16 and area 7B: Triangle Park

AOPC 21: Port

AOPC 23: Near Port side at high PCB area  
Lagoon

AOPC 19: Gunderson

AOPC 24: Fireboat area

AOPC 26: Near tank farm sites

In addition, (1) two additional composited samples could be created for the Gasco and Arkema sites to allow re-evaluation of the decision to exclude these sediments from the T4 CDF or any future CDF; (2) two composited samples could be created in relatively clean sediments upriver and down river from the 5.5 mile primary Superfund study area to provide a reference for interpretation of test results.

Analyses: The following analyses should be considered for each composited sample:

- Bulk Analysis for Portland Harbor Chemicals of Concern (CoC) and any other parameters of interest, grain size, and TOC.
- Dredging Elutriate Test (DRET) Corps Upland Testing Manual. Results will be used to determine if specialized dredging equipment/techniques will be necessary.
- Modified Elutriate Test (MET) Corps Upland Testing Manual. Results will be used to determine whether special design/treatment requirements for return effluent from confined aquatic or confined upland disposal sites are necessary.
- Sequential Batch Leachate Test (SBLT) Corps Upland Testing Manual. Results in a

desorption isotherm that can be used in a leachate attenuation model. Model results can be used to design containment dike(s) for in-water or upland disposal sites. Highly leachable sediments may be screened as poor candidates for capping.

- Pancake Column Leachate Test (PCLT) Corps Upland Testing Manual. Results in an elution curve that is used with a dispersion-advection model. Model results can be used to design containment dike(s) for in-water or upland disposal sites. Highly leachable sediments may be screened as poor candidates for capping.
- TCLP. Typically required for solid waste and/or hazardous waste landfills in Oregon, results may be useful to determine the degree of management the material would need in an upland environment (e.g., subtitle C versus D).